

Epidemiology and Communicable Disease Assignment

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1. Communicable Diseases

Definition

A communicable disease is an illness caused by specific infectious agents or their toxic products that can be transmitted from one person, animal, or the environment to another. These diseases can spread directly through physical contact or indirectly through contaminated food, water, air, or vectors.

Causative Agents

Communicable diseases are caused by different types of microorganisms, including:

Bacteria – e.g., *Mycobacterium tuberculosis* causes tuberculosis.

Viruses – e.g., HIV, Hepatitis B virus, Influenza virus.

Fungi – e.g., *Candida albicans* causes candidiasis.

Protozoa – e.g., *Plasmodium* species cause malaria.

Helminths (worms) – e.g., *Ascaris lumbricoides* causes ascariasis.

Modes of Transmission



1. Direct transmission: Person-to-person contact (e.g., through kissing, touching, or sexual contact).

Droplet infection from coughing or sneezing.

Mother-to-child (vertical transmission).

2. Indirect transmission:

Airborne: e.g., tuberculosis.

Vehicle-borne: through contaminated food, water, or objects.

Vector-borne: transmitted by insects such as mosquitoes (malaria) or flies.

Methods of Prevention and Control

I. Health education on personal and environmental hygiene.

II. Immunization against vaccine-preventable diseases (e.g., measles, polio).

III. Isolation of infected persons to prevent spread.

IV. Proper sanitation and waste disposal.

V. Use of insecticides and mosquito nets to control vectors.

V. Prompt diagnosis and treatment of infected individuals.

2. Endemic, Epidemic, and Pandemic

ENDEMIC: An endemic disease is one that is constantly present within a specific geographic area or population group. Example: Malaria is endemic in many parts of Nigeria.

EPIDEMIC: An epidemic occurs when there is a sudden increase in the number of cases of a disease above what is normally expected in a community or region. Example: Cholera outbreak in a community.

PANDEMIC: A pandemic is an epidemic that spreads across several countries or continents, usually affecting a large number of people. Example: COVID-19 pandemic that began in 2019.

3. Incidence and Prevalence

Incidence: refers to the number of new cases of a disease occurring in a population during a specific period of time. Example: If 50 new cases of malaria occur in a village of 1,000 people



none year, the incidence is 5%.

Prevalence: refers to the total number of existing cases (both new and old) of a disease in a population at a particular point in time or over a period. Example: If 200 people currently have malaria in the same village, the prevalence is 20%.

Importance in Epidemiology

Incidence helps identify the risk of contracting a disease and evaluate the effectiveness of preventive measures.

Prevalence helps determine the burden of a disease and aids in planning for healthcare resources and services.

4. Measures for Controlling Communicable Diseases at the Community Level

I. Health Education: Promoting awareness about hygiene, sanitation, and disease prevention.

II. Environmental Sanitation: Proper disposal of refuse, maintenance of clean water supply, and control of sewage.

III. Immunization Programs: Regular vaccination to prevent diseases like measles, polio, and tetanus.

IV. Surveillance and Reporting: Early detection and prompt reporting of cases to health authorities.

V. Isolation and Quarantine: To prevent spread from infected individuals.

VI. Vector Control: Eliminating breeding sites of mosquitoes and other vectors.

VII. Provision of Safe Water and Food: Ensuring food hygiene and water purification.

VIII. Treatment and Chemoprophylaxis: Prompt treatment of infected persons and preventive treatment of exposed individuals.

5. Short Notes

a. Epidemiological Triangle: The epidemiological triangle is a model that explains the relationship between the agent, host, and environment in the spread of disease:

Agent: The microorganism that causes the disease (e.g., virus, bacteria).

Host: The person or animal that harbors the disease.



Environment: External factors that promote disease transmission, such as poor sanitation, overcrowding, and climate

b. Vehicle-Borne Transmission: This refers to the spread of infectious agents through contaminated inanimate objects or substances called vehicles, such as water, food, blood, or utensils. Example: Cholera spread through contaminated drinking water or food.

c. Point Prevalence and Period Prevalence

Point Prevalence: The proportion of a population that has a disease at a specific point in time. Example: The number of people with influenza on October 30, 2025.

Period Prevalence: The proportion of a population that has a disease during a specified period of time (e.g., one month or one year). Example: The number of people who had malaria between January and December 2025.

References

Park, K. (2021). Textbook of Preventive and Social Medicine.

World Health Organization (WHO). (2024). Communicable Diseases Surveillance and Response.

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